

CURRENT LITERATURE.

A new text-book of botany.

The last (fourth) edition of Sachs' admirable text-book, a work which marked a distinct era in the teaching of botany, appeared in 1874, and owing to the rapid advances of the science, great need has been felt for some time for a revision of the work or of a new work to take its place. The author himself, having long since abandoned all hope or even desire to revise the work in its original form, published a work about ten years ago covering the physiological portion, and somewhat later Prof. Goebel wrote a work covering the part upon special morphology. These greatly enlarged portions still left a strong demand for a general text book of moderate size. The publisher, to whom the botanical public is greatly indebted for bringing out many works of the highest merit, made a special effort in 1890 to secure a new edition of the text-book. He urged the task upon Prof. A. B. Frank of Berlin, who was in many ways admirably fitted to undertake it. The offer was finally rejected upon grounds substantially the same as those that had influenced Prof. Sachs long before: i. e., that even the plan of the work needed changing, making it equivalent to writing a new treatise.

A new treatise, however, was at once undertaken, and to-day we have in Frank's *Lehrbuch der Botanik*¹, a work that presents the general subject of botany as nearly along the lines laid down by Sachs' text-book as could probably be attained at the present time, and yet presenting the freedom of treatment and freshness of matter of a thoroughly independent work. It is in two volumes, the first containing anatomy and physiology and the second, morphology and classification. A single index is made to serve for both. Some of the illustrations have already appeared in Sachs' textbook, but many also are new.

A feature of the work that is indicative of the change that has taken place in the recent relative development of the main departments of botany, is the comparatively large space given to physiology. Only one third of the first volume is devoted to the discussion of cells and tissues. This portion of the work is well done, but presents no specially new features. The remaining two thirds of the volume are devoted to physiology and it is in this part that we find the most characteristic and interesting portions of the author's labor.

¹FRANK, A. B.:—*Lehrbuch der Botanik nach den gegenwärtigen Stand der Wissenschaft*. Vol. I, Zellenlehre, Anatomie und Physiologie. 669 pp. 227 illust. 1892. Vol. II, Allgemeine und specielle Morphologie. 431 pp. 417 illust. 1893. Leipzig, Wilhelm Engelmann. Roy. 8vo. Marks 29.

Physiology is defined as the physics and chemistry of living objects. The external conditions and agents, such as heat, light, electricity, gravity, water, oxygen, contact of solid bodies, and symbiosis, are first taken up. The last topic occupies twenty pages, and is a feature of the work that every botanist will desire to examine. Symbiosis is distinguished as antagonistic (parasitism) and mutualistic. The latter is again separated into disjunctive (illustrated by the reciprocal benefits in insect pollination) and conjunctive (illustrated by lichen symbiosis, ectotropic and endotropic mycorrhiza, and by the presence of algæ within some higher plants). Several well drawn figures illustrate the ectotropic mycorrhiza of beech and hornbeam, and of the endotropic mycorrhiza of Ericaceæ, Orchidaceæ and Leguminosæ.

Under physical properties and phenomena the movement of protoplasm, water and gas, the mechanical, optical and electrical peculiarities, and the many phases of growth and movement are very fully treated. It will be remembered that Frank originated the terms heliotropism and geotropism, which apply to two of the most interesting characteristics of plants.

The chemical portion of the subject includes respiration, fermentation, the numerous classes and kinds of vegetable compounds, and the extensive topic of nutrition. The last has made wonderful development in the past few years, and the author having been one of the most active of investigators in this line, makes this one of the most interesting portions of the work.

The physiological part of the first volume closes with a chapter on reproduction, heredity, etc.

The second volume opens with fifty pages of general morphology, and the remainder is devoted to special morphology and classification.

The following outline will give the main features of the classification adopted by the author.

I. THALLOPHYTA:

1. Myxomycetes.
2. Schizophyta (includes nostoc, oscillaria, etc., and bacteria).
3. Peridinea (small, mostly marine, flagellates).
4. Diatomaceæ.
5. Algæ (in five classes, one being Characeæ).
6. Fungi (in three classes).

II. ARCHEGONIATÆ:

1. Muscinei.
2. Pteridophyta (in four classes, one entirely fossil).

III. PHANEROGAMÆ:

1. Gymnospermæ (in four classes, one entirely fossil).
2. Angiospermæ.

Lichens in this classification are distributed under the discomycetous, pyrenomycetous and basidiomycetous fungi, the larger part falling under the first. Angiospermæ are divided into only two subgroups: Archiclamydeæ and Sympetalæ, the former including the Polypetalæ and most of the Apetalæ, and the latter the Gamopetalæ, as heretofore classified.

The citations of literature throughout the work are grouped at the end of each subject. There are three unusually full indexes, one of illustrations, one of subjects and one of plant names.

The work is a valuable addition to the present list of textbooks of botany. One can only regret that it is not also published in the English language.

NOTES AND NEWS.

CARL FRIEDRICH NYMAN, the author of the useful *Conspectus Floræ Europææ*, died recently in Stockholm.

DR. DIETRICH BRANDIS, the well-known forest botanist, has been called to a professorship in the University of Bonn.

PROFESSOR A. von Nordenskiöld, of Stockholm, has been elected a member of the Academy of Sciences at Paris to fill the place made vacant by the death of Alphonse DeCandolle.

THE EDITORIAL STAFF for the new "Standard Dictionary of the English Language," shortly to be published by Funk and Wagnalls Co., New York, includes the following botanists: F. H. Knowlton, Erwin F. Smith, David White and W. T. Swingle, all of Washington, D. C., in charge of botany, and A. A. Crozier in charge of pomology.

THE COMMITTEE of ten selected by the Botanical Club met on Wednesday morning, August 23, 1893, and, having previously prepared their first ballots proceeded to elect fifteen additional persons to become charter members of the American botanical society. Twelve were elected on the first ballot and the remaining three on the second. The following are the names of the twenty-five charter members:

Arthur, J. C.
Atkinson, G. F.
Bailey, L. H.
Barnes, C. R.
Bessey, C. E.
Britton, N. L.
Britton, E. G.
Campbell, D. H.

Coulter, J. M.
Coville, F. V.
Eaton, D. C.
Farlow, W. G.
Greene, E. L.
Halsted, B. D.
Hollick, A.
MacMillan, C.

Robinson, B. L.
Sargent, C. S.
Scribner, F. L.
Smith, J. Donnell.
Thaxter, R.
Trelease, W.
Ward, L. F.
Wilson, W. P.
Underwood, L. M.